



THEY CAME FROM several foreign countries and cities throughout the United States to learn about a fast running computer code that's being developed and tested by EG&G Idaho's Code Development Division. The code, RELAP5, is expected to play a significant role in verifying the effectiveness of safety systems of nuclear power plants. Members of Code Development held training sessions throughout the week of March 30. At the end of the week, participants had gained a working knowledge of the code, having run it on three increasingly complex system problems. The training seminar was held at University Place. (Photo by Ron Paarmann.)

Code analyzes nuclear systems

A new computer-aided method of analyzing nuclear reactor systems for safety and reliability has been developed at INEL.

Developed in the Interactive Reliability Analysis Project, the method is used to analyze reactor system design to pinpoint any potential system weaknesses. The technology has been developed over the past several years by EG&G Idaho's Advanced Methods Office.

"Reliability Analysis" has been used for many years. The EG&G Idaho innovation, developed by Dr. Dale Rasmuson, is a method that allows most of the analysis to be done by computer, providing a complete analysis more quickly, more accurately and less expensively than in the past.

The method uses "fault trees" of reactor systems. A fault tree is a logic diagram which details the effect of component failures upon the system. Previously, fault trees had to be constructed by hand, and that information then coded manually for the computer.

Using the new method, the analyst constructs a fault tree on a computer terminal. The computer then formats the fault tree data for a "common cause failure analysis" which uses a computer program to identify potential problem areas if any exist. A "common cause" is defined as a single event such as vibration from an earthquake, which can cause several components to fail.

Once potential problem areas are identified, analysts can study the system to determine what design changes, if any, are needed.

Funded by the DOE Light Water Reactor Safety program, a major goal of the Interactive Reliability Analysis Project is to make the new technology available to the commercial sector of the nuclear industry to aid in increased reactor safety and reliability.

Understanding TMI challenges TIO group

by Rita Scott, EG&G Idaho

The excitement and challenge the '49ers found in the West a century ago is being rediscovered by some EG&G Idaho Westerners at the site of the '79 accident — Three Mile Island.

They are the men and women of the Three Mile Island/Technical Integration Office at Middletown, PA, who are participating in one of the company's first site office ventures and, incidentally, breaking new ground in research for the nuclear industry.

The operation is headed by Harold Burton, EG&G/TMI site manager. Other personnel from the Idaho office include procurement specialists Donna Morris and Julie Longhurst, planning specialist Joe Kerscher, documentation coordinator Frank Kocsis and engineers Greg Eidam and Bob Holzworth.

Eidam, manager of the radiation, environment and decontamination portion of the program, which covers transportation and disposition of fission products, decommissioning and personnel dose reduction, accident application and evaluation and citizen involvement, says the job being done at TMI is important.

"What we are doing is searching and exploring — trying to understand the TMI accident and collect scientific information for the nuclear community."

Eidam has done a fair amount of that exploring himself. He has made several entries into the containment vessel to assess the damage, which he found not as serious as he'd expected.

"The entries were exciting, but they took a great deal of preparation — so much so that the entries themselves were almost anticlimactic."

Eidam says the crane which will be used to lift

the head off the reactor vessel will have to be refurbished and that will be another one of his jobs.

"There aren't a lot of people around to back you up like in Idaho," he says. "You have to stretch yourself."

Eidam says he has discovered that what he is doing at work has contributed to his own education. "I've grown much more self-sufficient as a result of this job, and learned to reason out the problems instead of calling for help."

Eidam and Kocsis were also involved in a citizen-radiation monitoring program last spring

in a 12 community effort to educate the public about radiation before the Krypton 85 gas was purged. It was a new idea. "Everything we do here is new, something the industry has never gone through before," Eidam states. "The life is fast-paced, with some frustration, but I find it very satisfying, both personally and in my career."

Holzworth, technical coordinator for radioactive waste management, talks about the technical challenges at TMI, especially in the volume reduction and storage of TMI wastes.

"Some of the issues being worked on today will become standard in years to come," Holzworth says. "The industry has so much to learn in this area." But he maintains that the work will provide long-term benefits to industry.

Holzworth is also getting experience in what he calls "endless interfacing" with utilities, government agencies and other laboratories, and he has had a chance to see what is involved with nuclear plant licensing. "It was a very positive step in my career to come out here."

Joe Kerscher echoes Eidam and Holzworth in saying he is now doing things he's never done before. "I used to just read monthly reports. Now I not only write them, but I put field proposal work package agreements together. I've also taken on a great deal more responsibility than I've ever had before. There have been firsts here in lots of things, both for me and for the nuclear industry."

"This is an opportunity of a life-time. We hope an accident like TMI won't happen again. Still, not too many people will be able to say they worked in the recovery of TMI," Kocsis says.



INEL PERSONNEL working at TMI are pictured in front of the facility's cooling towers. From left to right are (front row) Harold Burton, Donna Morris, Julie Longhurst, Willis Bixby; (back row) Greg Eidam, Frank Kocsis, Joe Kerscher and Bob Holzworth.